

I & A Dept

Box 10: 196

Navigation.

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## REPORT ON THE SYSTEM OF AID TO NAVIGATION SCHOOLS.

Science and Art Department,  
24th January 1863.

Sir,

The introduction of the system of payments on results into all the educational departments, except the Navigation Schools, and its substitution in the place of the former systems of certificate allowance, etc., would appear to render a revision of the grants to Navigation Schools, in which the certificate system more or less still pertains, necessary. I have therefore carefully considered the whole subject, and as in many points I believe that not only the system of administration but the subjects of instruction aided may with great advantage be changed, I beg leave to submit the following suggestions for the consideration of My Lords.

The aid granted to all Navigation Schools, except three recently established, is governed by the Navigation Minute of July 1859, and the report made by Captain Ryder, R.N., and myself, in June 1860, and approved by My Lords. The few Schools recently established are under the Interpretation Minute of 6th December 1860, which though recognising a system of payments on results contains restrictions based on the amount of certificate allowance. The attached table is a list of the Schools, distinguishing old and new, and giving the amount of instruction afforded by them during 1861 and 1862. These results for the purposes of this report may best be classed under four heads,—

- 1st. Masters, Chief Mates, Only Mates, and Second Mates.
- 2nd. Seamen and Apprentices.
- 3rd. Boys going to Sea.
- 4th. Others such as Mechanics, etc.

Simply taking the figures in this table, the system would appear very economical on the face of it, the results being large in comparison with the expenditure. Thus in 1862 there were 1214 of the first class and 987 of the second class under instruction, of whom 848 were successful at the Board of Trade



examinations ; of the third class, or boys, there were 735 under instruction, of whom 169 went to sea, besides 219 mechanics and others who attended the schools. The total payments to the schools was 2088*l*. It is necessary however to analyze these results carefully in order to appreciate correctly not only their amount but also their quality as the justification for the aid. The instruction that is given to the first class, viz., Masters, Mates, etc., is almost, if not entirely, confined to the "cram" required to pass the examination of the Board of Trade for a certificate under the Merchant Shipping Act. The standard of requirements fixed for these examinations is merely an empirical or rule of thumb knowledge of certain practical rules as far as Navigation and Nautical Astronomy are concerned,—I am not now speaking of the examination in practical seamanship which is not taught in the Schools. The only partial exception, as far as I know, to the empirical nature of the knowledge required being for the Masters "extra certificate," and these are but rarely taken. In this division of the instruction the Teachers receiving Government aid are simply competing with the ordinary crammers at the different ports. The class of men again are not such as public aid is usually granted for. Their circumstances are much above those of the industrial classes for whose instruction payments are made under the Science Directory.

On the other hand it may be urged with considerable force that these Masters, Mates, and others, pay large fees for examination and registration amounting to a considerable sum per annum, and that they have therefore a claim on the country for assistance in instruction. Nor do I think it any bar to this claim that most if not all of this amount is spent in supporting the staff of examiners, etc. These can scarcely be considered as for the benefit of the Masters and Mates, but for the protection of, and therefore to be paid for by, the public.

The same objection—that their circumstances are such as not to require State aid—does not apply to the class of Seamen and Apprentices who form the second large class in the table of results. But the instruction given them is as a rule either of that practical and rather meagre description required for the Board of Trade examination, or it is, as in the case of apprentices in the evening classes, of a very elementary nature such as it is scarcely within the province of this Department to communicate.

I believe that when Navigation Schools were established it was hoped they would give some grounding in the principles and theory of the subjects, something more than the mere cram and



# RETURN OF THE WORK DONE IN THE NAVIGATION SCHOOLS. 1861 & 1862.

School.	No. of Masters, Chief Mates, only, and 2nd Mates.		No. of Seamen and Apprentices.		No. successful at the Board of Trade examinations, 1862.	No. taking Extra Certificate, 1862.	Boys under instruction, No. gone to sea in ( )		Mechanics under instruction.		Amount of aid received from the Science and Art Department.	
	1861	1862	1861	1862			1861	1862	1861	1862	1861	1862
	£	s.	£	s.			£	s.	£	s.	£	s.
Aberdeen	144	189	62	48	57	—	—	—	—	—	70	0
Belfast*	32	7	19	16	10	—	—	—	—	—	15	0
Carrickfergus*	—	—	1	3	—	—	—	—	—	—	—	—
Dublin	1	7	3	20	6	—	—	—	—	—	—	—
Glasgow	66	103	60	20	66	—	—	—	—	—	—	—
Greenock*	—	20	—	15	12	—	—	—	—	—	—	—
Hull	—	—	—	—	—	—	—	—	—	—	—	—
Leith	72	119	73	87	84	—	—	—	—	—	—	—
Liverpool	319	292	380	347	287	—	—	—	—	—	—	—
Well-street	57	67	189	188	98	—	—	—	—	—	—	—
Poplar	+127	+123	32	26	36	—	—	—	—	—	—	—
Shadwell	37	40	130	110	41	—	—	—	—	—	—	—
Newcastle-on-Tyne	48	39	8	11	22	—	—	—	—	—	—	—
Sunderland	183	187	32	47	115	—	—	—	—	—	—	—
Waterford	8	12	18	10	5	—	—	—	—	—	—	—
Great Yarmouth	12	9	48	39	9	—	—	—	—	—	—	—
Totals	1106	1214	1055	987	848	—	688 (137)	735 (169)	135	219	1920	5
											2088	3
												6

\*These Schools are under the Interpretation Minute.

†60 of these were Midshipmen.

‡63 of these were Midshipmen.

Boy 13



rule of thumb instruction afforded by the ordinary teachers at the ports. This object under the present system they have failed almost entirely in effecting.

In proposing a revision of the system of aid then I have considered it most advisable to make the instruction of Masters and Mates an entirely secondary and incidental action of the Schools, while their just claims receive due consideration. At present highly qualified teachers with large certificate allowances are provided by the Science and Art Department for the instruction of Masters, Mates, and Seamen, to pass the Board of Trade examinations, under the expectation that they will avail themselves of the opportunity to obtain a somewhat more sound instruction than from the ordinary teachers. If, instead, the teachers are compelled to turn their attention to sound instruction in Mathematics, and the Theory and Science of Navigation, Steam, etc., by these being considered the prime objects of the School and the only results to be paid for, they will be secured; while the preparation for the Board of Trade examination will not be neglected.

As the Merchant Shipping Act entailed certain examinations on all Masters and Mates, the machinery for supplying the instruction, as might be expected, was soon found in sufficient abundance and paid for by them. For the Science and Art Department to step in and provide teachers in a few places is only interfering with private speculation and rendering it uncertain. Such interference is sure to be injurious unless the Department is prepared to take the instruction wholly under its control. And the instruction is really of such a technical nature amounting in fact to teaching a trade, that although the State may demand this knowledge it cannot be considered its function to provide it. But sound scientific instruction, in subjects having the same relation to a seafaring life that the Sciences mentioned in the Science Directory have to the other industries of the country, it is evidently a duty of this Department to aid in affording. Such an action while it secures that which is of great service to the country in general does not interfere with anything that private enterprise will compass. The results are too remote to afford the necessary stimulus. At the same time the staff provided to give sound scientific instruction will incidentally aid the Masters and Mates in securing the instruction to pass the Board of Trade examination at a cheap rate, while their fees will go towards supporting the teachers and leave them not wholly dependent on the payments from the Department.



The instruction of boys destined for the sea in a sound knowledge of Mathematics, Navigation, Nautical Astronomy, and the Use of Instruments, is undoubtedly the most advantageous and best action of the Schools. Unfortunately, as will be seen, the class of boys is very small, and but a small proportion go to sea. In fact a large proportion have no intention of adopting a seafaring life. Much of the instruction is simply elementary—reading, writing, and so on. For the Science and Art Department to pay for such instruction, which should be obtained at a regular elementary school, cannot be justified; and this applies equally to the elementary instruction given to Apprentices and Seamen in the evening which might be given in the Night Schools or third attendances of the elementary Day Schools. Under the present system of aid it is almost impossible to avoid some payment for elementary instruction, the pupils—apprentices, and boys—not being sufficiently advanced to take up the higher subjects I have mentioned. But on a system of payments on the results of instruction in these subjects this difficulty will be obviated; and the elementary instruction, if given, will be at the cost of the supporters of the School, not of this Department. This system would also obviate the difficulties arising from the number of persons under the head of artisans, and others, who attend and receive principally elementary instruction.

I would therefore recommend the following system of aid to the instruction of all such as have adopted, or propose to adopt, a seafaring life in the science of the subjects special to their calling. This system is, as far as administration is concerned, only a slight modification of the general Science system in some particulars which are necessary to meet the case. And in proposing a system of aid in subjects special to Navigation, I would beg leave to recommend that it be extended to *all* who may be engaged in, or who may *bonâ fide* propose to engage in,\* a sea-faring life without any restriction as to class, as in the general Science instruction. For the marine is a distinct class which it would be difficult to subdivide. It has in this country always been considered an exceptional class for reasons on which it is unnecessary for me here to enter. It has also for reasons before given a certain exceptional claim.

#### OUTLINE OF A SYSTEM OF AID TO NAVIGATION INSTRUCTION.

Payments to be made on the results of instruction in the following subjects to certificated teachers.

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\*To render this more secure the payment should not be made to the Teacher till the pupil was proved to have gone to sea.



1. Mathematics, including such portions of Algebra, Geometry, Mensuration, Plane and Spherical Trigonometry, and Logarithms, as are necessary for understanding 2 & 3.
2. General Navigation.
3. Nautical Astronomy.
4. Physical Geography.
5. Steam.

Examinations to be held (1) for adults, seamen, and others, at the sea-port towns where local Marine Boards are formed, four times a year; (2) for youths, etc., in inland towns once a year, as a continuation of the regular May examination of the Department, or at Christmas if found more convenient.

The successful candidates to be classed as passed, honourable mention, third, second and first grade certificates. In the three last cases a certificate to be given to that effect, which may, if second or third grade, be improved at any future examination. The payments to the teacher to be 1*l.* 2*l.* 3*l.* 4*l.* or 5*l.* according to the grade of result. The condition to be, in the case of a boy, that he has received 40 lessons from the teacher and goes to sea; and in that of an adult at sea that he has received 20 lessons. The voucher for the attendance of the pupil to be given by the local committee.

The examination for boys, to be held simultaneously all over the kingdom, and superintended by the local committee, the papers being supplied from the Science and Art Department.

The examination for adults, seamen, and others, to be held by the local Marine Boards, the papers being supplied by the Science and Art Department. The Board of Trade will perhaps pay some small fee per examination to the Secretary of the local Marine Board, in the same way as the Secretaries of the Local Committees are paid by this Department. I have proposed the officers in connection with the Board of Trade being employed in part of the work because, in consequence of the short time seamen, masters, and mates, remain at a port, the examinations for them must—to meet the interest of the teachers—recur oftener than a local committee can well be expected to undertake them; secondly, because from better opportunities of knowing, such a body can give a better guarantee as to the candidates being *bonâ fide* sailors; and thirdly, because the examination being then brought to a certain extent in connection with the regular examinations of the Board of Trade, and being removed from all clique control at the ports, the interests of the shipping trade are more likely to be enlisted in



their favour, the knowledge of their existence more generally and rapidly diffused, and their effect on the regular examinations of the Board of Trade—which I believe there is a general wish if possible to raise in character—rendered more efficacious.

It may perhaps be considered that the amounts of the payments I have suggested are rather high, but I have taken them on that scale because from the migratory habits of their pupils much of a teachers instruction will, as far as these grants are concerned, be thrown away, the pupils leaving before the examination; and because, though from the insufficiency of the data it is impossible to say now what they may amount to, I do not think it will for some years be more than, even if it be as much as, the present grants; while if the teachers are made clearly to understand that the amounts are tentative and experimental, they may be reduced at any time without hardship.

My reasons for proposing to restrict these grants to the seaman class are that the subjects of instruction, which—unlike those of the general Science system—are directed to a particular industry, if I may so call it, are rather special and are to a certain extent parts of, or overlap some of the subjects as laid down in the general Science Directory; and one of them—pure Mathematics—it has not been considered advisable to incorporate in these subjects. At the same time this scheme should for the interests of the Navy be as generally applicable as possible, and may with great advantage extended to inland towns, where without this restriction it would interfere with the general Science system.

I am, Sir,

Your obedient Servant,

J. F. D. DONNELLY,  
Captain R.E.

Henry Cole, Esq., C.B.,  
Science and Art Department.

# RETURN OF THE WORK DONE IN THE NAVIGATION SCHOOLS. 1861 & 1862.

School.	No. of Masters, Chief Mates, only, and 2nd Mates.		No. of Seamen and Apprentices.		No. successful at the Board of Trade examinations, 1862.	Extra Certif-icate, 1862.	Boys under instruction. No. gone to sea in ( )		Mechanics under instruction.		Amount of aid received from the Science and Art Department.	
	1861	1862	1861	1862			1861	1862	1861	1862	1861	1862
Aberdeen -	144	189	62	48	57	—	—	—	—	—	£	£
Belfast* -	32	7	19	16	10	—	5 (3)	—	—	—	70 0 0	185 0 0
Carrickfergus* -	—	—	1	3	—	—	8 (2)	—	—	—	15 0 0	0 0 0
Dublin -	1	7	3	20	6	—	1 (0)	—	—	—	—	0 0 0
Glasgow -	66	103	60	20	66	—	16 (14)	—	—	—	—	—
Greenock* -	—	20	—	15	12	—	—	—	—	—	—	—
Hull -	—	—	—	—	—	—	161 (10)	—	35	—	70 0 0	70 0 0
Leith -	72	119	73	87	84	—	11 (4)	—	—	—	—	4 0 0
Liverpool -	319	292	380	347	287	—	—	29	20	—	228 19 11	255 0 0
Well-street -	57	67	189	188	98	—	—	—	—	—	100 0 0	165 0 0
Poplar -	+127	+123	32	26	36	—	—	—	—	—	223 0 0	223 0 0
Shadwell -	37	40	130	110	41	—	106	—	—	—	95 0 0	95 0 0
Newcastle-on-Tyne -	48	39	8	11	22	—	52 (4)	6	98	—	132 10 0	132 10 0
Sunderland -	183	187	32	47	115	—	80 (5)	48	—	—	262 15 4	268 13 4
Waterford -	8	12	18	10	5	—	141 (69)	125 (3)	—	—	207 2 0	200 0 0
Great Yarmouth -	12	9	48	39	9	—	18 (8)	19 (5)	106	66	256 13 2	239 3 6
Totals	1106	1214	1055	987	848	—	688 (137)	735 (169)	—	—	50 0 0	65 0 0
						—	89 (16)	95 (24)	—	—	209 4 8	185 16 8
						—	688 (137)	735 (169)	135	219	1920 5 1	2088 3 6

\*These Schools are under the Interpretation Minute. †60 of these were Midshipmen.

†63 of these were Midshipmen.

†63 of these were Midshipmen.

Boy 13



\* These Schools are under the Jurisdiction of the Ministry. 100 of these were under the Ministry. 103 of these were under the Ministry.

School.	Totals										1897		1898		1899		1900		1901		1902		1903		1904		1905		1906		1907		1908		1909		1910		1911		1912		1913		1914		1915		1916		1917		1918		1919		1920		1921		1922		1923		1924		1925		1926		1927		1928		1929		1930		1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100		2101		2102		2103		2104		2105		2106		2107		2108		2109		2110		2111		2112		2113		2114		2115		2116		2117		2118		2119		2120		2121		2122		2123		2124		2125		2126		2127		2128		2129		2130		2131		2132		2133		2134		2135		2136		2137		2138		2139		2140		2141		2142		2143		2144		2145		2146		2147		2148		2149		2150		2151		2152		2153		2154		2155		2156		2157		2158		2159		2160		2161		2162		2163		2164		2165		2166		2167		2168		2169		2170		2171		2172		2173		2174		2175		2176		2177		2178		2179		2180		2181		2182		2183		2184		2185		2186		2187		2188		2189		2190		2191		2192		2193		2194		2195		2196		2197		2198		2199		2200		2201		2202		2203		2204		2205		2206		2207		2208		2209		2210		2211		2212		2213		2214		2215		2216		2217		2218		2219		2220		2221		2222		2223		2224		2225		2226		2227		2228		2229		2230		2231		2232		2233		2234		2235		2236		2237		2238		2239		2240		2241		2242		2243		2244		2245		2246		2247		2248		2249		2250		2251		2252		2253		2254		2255		2256		2257		2258		2259		2260		2261		2262		2263		2264		2265		2266		2267		2268		2269		2270		2271		2272		2273		2274		2275		2276		2277		2278		2279		2280		2281		2282		2283		2284		2285		2286		2287		2288		2289		2290		2291		2292		2293		2294		2295		2296		2297		2298		2299		2300		2301		2302		2303		2304		2305		2306		2307		2308		2309		2310		2311		2312		2313		2314		2315		2316		2317		2318		2319		2320		2321		2322		2323		2324		2325		2326		2327		2328		2329		2330		2331		2332		2333		2334		2335		2336		2337		2338		2339		2340		2341		2342		2343		2344		2345		2346		2347		2348		2349		2350		2351		2352		2353		2354		2355		2356		2357		2358		2359		2360		2361		2362		2363		2364		2365		2366		2367		2368		2369		2370		2371		2372		2373		2374		2375		2376		2377		2378		2379		2380		2381		2382		2383		2384		2385		2386		2387		2388		2389		2390		2391		2392		2393		2394		2395		2396		2397		2398		2399		2400		2401		2402		2403		2404		2405		2406		2407		2408		2409		2410		2411		2412		2413		2414		2415		2416		2417		2418		2419		2420		2421		2422		2423		2424		2425		2426		2427		2428		2429		2430		2431		2432		2433		2434		2435		2436		2437		2438		2439		2440		2441		2442		2443		2444		2445		2446		2447		2448		2449		2450		2451		2452		2453		2454		2455		2456		2457		2458		2459		2460		2461		2462		2463		2464		2465		2466		2467		2468		2469		2470		2471		2472		2473		2474		2475		2476		2477		2478		2479		2480		2481		2482		2483		2484		2485		2486		2487		2488		2489		2490		2491		2492		2493		2494		2495		2496		2497		2498		2499		2500		2501		2502		2503		2504		2505		2506		2507		2508		2509		2510		2511		2512		2513		2514		2515		2516		2517		2518		2519		2520		2521		2522		2523		2524		2525		2526		2527		2528		2529		2530		2531		2532		2533		2534		2535		2536		2537		2538		2539		2540		2541		2542		2543		2544		2545		2546		2547		2548		2549		2550		2551		2552		2553		2554		2555		2556		2557		2558		2559		2560		2561		2562		2563		2564		2565		2566		2567		2568		2569		2570		2571		2572		2573		2574		2575		2576		2577		2578		2579		2580		2581		2582		2583		2584		2585		2586		2587		2588		2589		2590		2591		2592		2593		2594		2595		2596		2597		2598		2599		2600		2601		2602		2603		2604		2605		2606		2607		2608		2609		2610		2611		2612		2613		2614		2615		2616		2617		2618		2619		2620		2621		2622		2623		2624		2625		2626		2627		2628		2629		2630		2631		2632		2633		2634		2635		2636		2637		2638		2639		2640		2641		2642		2643		2644		2645		2646		2647		2648		2649		2650		2651		2652		2653		2654		2655		2656		2657		2658		2659		2660		2661		2662		2663		2664		2665		2666		2667		2668		2669		2670		2671		2672		2673		2674		2675		2676		2677		2678		2679		2680		2681		2682		2683		2684		2685		2686		2687		2688		2689		2690		2691		2692		2693		2694		2695		2696		2697		2698		2699		2700		2701		2702		2703		2704		2705		2706		2707		2708		2709		2710		2711		2712		2713		2714		2715		2716		2717		2718		2719		2720		2721		2722		2723		2724		2725		2726		2727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